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ABSTRACT

This paper describes the current state of secondary school computer literacy instruction in the Swiss canton of Vaud and the activities of a nationwide coordinating group concerned with the use of computers in Swiss secondary education. Information is presented on the requirements for instituting computer literacy instruction in Vaud, the types of micro- and minicomputers acquired by Vaud secondary schools, difficulties in the adoption of computer literacy courses, the development of computer-related teacher training programs, and the current level of computer assisted instruction in Vaud. It is noted that the use of computers in Swiss secondary education varies enormously from canton to canton. Also described are the experimental use of a 24-hour introductory computer literacy course in several schools in the French and German speaking parts of Switzerland and other activities of the nationwide coordinating group on computers. (ESR)

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COMPUTERS IN SWISS SECONDARY EDUCATION

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Although it has a population of only about 6 million, Switzerland is not just one country, but a confederation of 25 more or less independent states. Their independence is limited in military matters, but far-reaching in education. Of the countries represented here, Switzerland probably has the highest density of education Ministers. These Ministers who guard their independence jealously, meet regularly in conference (CDIP), either in plenary session, or by linguistic region to discuss their specific problems.

I shall briefly describe the situation as regards the teaching of computer science in the canton of Vaud, then the activities of the co-ordinating group on computers in Swiss secondary education.

COMPUTERS IN SECONDARY EDUCATION IN THE CANTON OF VAUD

Teachers turned their attention to the subject of computers in education in about 1970 and a number of experiments were conducted, either in conjunction with the Federal Polytechnical School, or independently after the appearance of desk-top computers. But computer science was not actually introduced in secondary education in the canton of Vaud, until after the IFIP conference in Marseille in 1975, well after its introduction in other cantons (Geneva and Zurich).

In 1977, the government of the canton of Vaud, mindful of the ever-increasing importance of computers in modern society - and their obvious educational value, appointed a committee on computers to study all the problems connected with the introduction and development of computer science in secondary education.

The committee, which is composed of secondary teachers and computer specialists, has two main aims: to promote basic instruction in computer science and the practical use of computers in the various branches of education. If these two aims are to be achieved, the following requirements must be satisfied:

- a. clear objectives must be set,
- b. every secondary school must acquire the necessary equipment,
- c. the role of computers in secondary education must be defined,
- d. teacher training must be encouraged and intensified,
- e. the appropriate teaching aids must be available,
- f. there must be a teacher in every secondary school responsible for stimulating interest in computer science.

- a. The objectives of a computer science course are well described in CDIP report No. 29 (reference 1).
- b. With regard to equipment, secondary schools in the canton of Vaud fall into two categories:
 - 26 lower secondary schools, which are dependent on their local municipality;
 - 8 upper secondary schools, which are controlled directly by the canton education authorities.

As computer science is a separate branch of study in the higher commercial schools, they were the first to be equipped with mini-computers. Then, during the first half of 1981, the committee on computers made a very detailed study of the review possibilities on the basis of specifications drawn up in conjunction with the heads of schools and computer science teachers. Preference was given to a decentralised arrangement and the choice fell on Swiss-made SMAKY micro-computers and Norwegian mini-computers made by the firm NORISK DATA.

Rapid progress is being made in the lower secondary schools: half of them have already experimented either with equipment of their own or with SMAKY micro-computers borrowed from the committee on computers for a few months. This practice of borrowing equipment has enabled several schools to run classes at no great expense. As a result, they have sound arguments to put forward when they request the necessary funds from the municipal authorities.

- c. The study of computer science is compulsory (3 hours a week for 1 to 2 years) for commercial section pupils and optional for the rest.

Professor ERSHOV, the Russian academician, has given a new meaning to the word "literacy". He maintains that, after the GUTENBERG age, we are now entering the TELEMATICS (computer and telecommunications) age and that the late 20th century illiterates will be those who are unable to use a computer! Without taking this literally, our aim is that all pupils should be receiving basic instruction in computer science within a few years. We face certain difficulties, of which I shall mention only two at this stage:

- the fact that it is inconceivable to introduce a new subject;
- the fact that there is systematic opposition to computer science within the teaching profession, eg on the part of some mathematicians.

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- d. The teaching of computer science and the use of computers for educational purposes are inconceivable without teacher training.

The canton's further training centre has been offering local further training courses for some years. As the department recently came out in favour of the more and more widespread introduction of computer science at both upper and lower secondary levels, the problem of systematic teacher training on a large scale currently arises. Thus, as from next year:

- all new teachers, in the literary as well as in the scientific and commercial branches, will learn how to use computers as a teaching aid as part of their course at the secondary teacher training college;
 - the secondary teacher training college will offer some students who show a particular interest in computers the opportunity of undergoing more advanced training to enable them to give basic instruction in computer science in all branches of secondary education.
- e. By the use of computers for educational purposes, we mean their use as a teaching aid in the same way as television, the blackboard or the microscope.

In our school (the CESSNOV, Yverdon), the biologists were the first to use computers as a teaching aid.

As it is not always possible in biology to conduct real experiments, computers are used for simulations based on models as already defined in 1973 by Professor Hebenstreit of France.

Although our biology teachers use computers mainly during practical sessions (the pupils are at the terminal), other uses are possible. For teaching basic accountancy, one colleague uses a package developed by the canton of Vaud, in which a video screen associated with a micro-system replaces the blackboard.

Note that a teaching package is usually in three parts (reference 5):

- a computer programme (usually available in floppy disc form);
- a handbook for students, to put them in the picture, remind them of a few basic concepts, explain the procedure and set them questions;
- a handbook for the teacher comprising a description of the programme, operating instructions, recommendations of a methodological nature etc.

It may also include a leaflet containing basic information on the subject studied and the model used.

The Committee on Computers has some 20 packages available for use by teachers. This small data-bank consists largely of packages that have been donated. The canton of Geneva, which is a few years ahead of us in this field, has helped us a lot.

I should just like to say a few words about the use of computers in school management. The CESSNOV is one of Switzerland's leaders in this field. Beginnings and ends of term would be impossible without the help of a computer (keeping pupil records, running the library, drawing up timetables, word processing etc). Of the 14 workposts currently available (12 fixed and 2 portable), 4 are used permanently by the administration.

COMPUTERS IN SWISS GENERAL SECONDARY EDUCATION

The situation varies enormously from one canton to another. In Berne, Basle and Zurich, the study of computer science is compulsory for the type C "maturité" (advanced-level school-leaving examination), and the canton of Ticino is introducing an optional course. Geneva has no compulsory course as yet, but optional courses are highly developed there and computers are used as a teaching aid much more extensively than in other cantons.

The co-ordinating group on computers, which is composed of secondary and university teachers, was set up in 1975 to study the introduction of computers in secondary education. In 1978 it made an initial proposal which is described in CDIP Information Bulletin No. 13: a compulsory 24-hour introductory course in computer science for all "maturité" pupils (reference 2). Such a course would have an intrinsic value as regards the pupils' general education and would make it possible for computers to be used afterwards as a teaching aid in all kinds of subjects. Aware of the difficulties inherent in its plan, which was realistic despite being reduced to the bare minimum, the group asked for permission to experiment with a 24-hour course. The proposal was accepted by the authorities and experiments were therefore conducted in several schools in the French and German speaking parts of Switzerland. With the support and encouragement of the Swiss Secondary Teachers' Association and the Swiss Further Training Centre, three teams experimented with the recommendations and prepared teaching materials:

- a team from Zurich: M E Hui and C Jung (24 hours of classes plus 24 hours of exercises with PASCAL)
- a team from Basle: M H Maag and M Vowe (24 hours of classes and applications with BASIC)
- a team from the French-speaking cantons: M J-C Diethelm and P Zabey from Geneva, M P-A Grezet from Neuchâtel and myself (24 hours of classes and exercises with BASIC).

Published this year, the CDIP's report 29 (reference 1) describes the results obtained and makes a more forceful case for this introductory course in computer science to be extended. Note that a member of parliament has tabled a motion with the Federal Council in this connection and that an answer is expected this year.

The group's activities are not confined to the teaching of computer science. It also assists the further training centre in organising its many courses in the subject.

In addition to bilingual courses, every year since 1975 the co-ordinating group has held a 2-day seminar in Interlaken for those responsible for the teaching of computer science in Switzerland (this year Professor Papert will be discussing his theories).

The group also takes part in teaching package exchanges, although we do encounter some difficulties as regards portability (language: German-French-Italian, programme language: BASIC, and computers not always compatible).

Let us not forget the important role of information. In addition to the Interlaken seminars and the Yverdon meetings, which provide direct information, we have a magazine "INTERFACE" (reference 3) which reports on experiments currently in progress, assists in the choice of equipment and describes new packages.

References:

1. The introduction of computer science in secondary education, interim report. CDIP No. 29, February 1982.
2. The introduction of computer science in secondary education. CDIP No. 13, July 1978.
3. INTERFACE. "The computer in secondary education", Lucerne further training centre bulletin.
4. INFORMATICS IN THE SECONDARY SCHOOL EDUCATION OF THE CANTON OF VAUD. Claude Desgraz. Computer in education, part 2, WCCE, 1981.
5. RAT package distributed by the canton of Vaud.